

AJV:csw:kaa 09/14/05 409279.doc  
PATENT

Attorney Reference Number 23-70742-03  
Application Number 10/757,332

### Claims

1-27. (cancelled)

28. (currently amended) A method, comprising:

operating a transistor device in a common base or common gate configuration;

coupling two or more input signal pathways to a first terminal of the transistor device,

wherein one of the input signal pathways is from a current source with a lowpass filter, the filter comprising active and passive components;

providing a virtual ground at the first terminal of the transistor device through a current path to the virtual ground, wherein the path is continuously uninterrupted at all frequencies; and

providing an output from a second terminal of the transistor device to a current-dependent load.

29. (cancelled)

30. (previously presented) The method of claim 28, further comprising:

controlling the transistor device with a servo device;

providing the virtual ground through a servo device terminal; and

providing feedback to the servo device from the first terminal of the transistor device.

31. (original) The method of claim 30, wherein the servo device includes an operational amplifier having a negative input and a positive input, and further comprising:  
receiving the feedback through the negative input; and

AJV:csw:kaa 09/14/05 409279.doc  
PATENT

Attorney Reference Number 23-70742-03  
Application Number 10/757,332

coupling the positive input to ground.

32. (original) The method of claim 28, wherein the first terminal corresponds to an emitter, the second terminal corresponds to a collector and the transistor device further includes a base, and which further includes coupling a different transistor device to the base, the different transistor device including a ground-coupled emitter.

33. (original) The method of claim 28, wherein the current-dependent load includes a laser device, and which further includes providing a control voltage to a first one of the input signal pathways and a sweep voltage to a second one of the input signal pathways.

34. (currently amended) The method of claim 28, wherein the current-dependent load includes a laser device and wherein the current source is a first current source, and the method further comprising:

supplying an approximately constant bias current to the transistor device from a first the first current source; and

providing electrical current to the laser device from a second current source.

35. (currently amended) An apparatus, comprising:

a transistor device including an emitter, a base, and a collector, said transistor device being in a common base configuration arranged to maintain said emitter at a predefined voltage;

a virtual ground coupled to said emitter, wherein the virtual ground is provided by a path that is uninterrupted for all frequencies, at which the transistor is operational;

AJV:csw:kaa 09/14/05 409279.doc  
PATENT

Attorney Reference Number 23-70742-03  
Application Number 10/757,332

a number of input signal pathways coupled to said emitter; and  
a ~~current dependent load~~ current source coupled to said collector, said ~~current dependent~~  
~~load~~ current source comprising at least one active component and being responsive to a signal  
input with one of said input signal pathways.

36. (currently amended) The apparatus of claim 35, wherein said ~~current dependent~~  
~~load~~ current source includes is coupled to a laser diode.

37. (currently amended) The apparatus of claim 35, wherein said ~~current dependent~~  
~~load~~ current source includes is coupled to a quantum cascade laser configuration.

38. (original) The apparatus of claim 35, further comprising an operational amplifier  
to control said transistor device, said operational amplifier including a negative input coupled to  
receive feedback from said emitter, a positive input coupled to ground, and an output configured  
to drive said base.

39. (original) The apparatus of claim 35, further comprising a different transistor  
device coupled to said base, said different transistor device including an emitter coupled to  
ground.

40. (original) The apparatus of claim 35, further comprising a control signal generator  
coupled to one of said inputs.

AJV:csw:kaa 09/14/05 409279.doc  
PATENT

Attorney Reference Number 23-70742-03  
Application Number 10/757,332

41. (currently amended) The apparatus of claim 35, wherein the current source is a first current source, the apparatus further comprising a first current source and a second current source, said input signal pathways being coupled to a first electrical node positioned between said emitter and said first second current source, and said collector being coupled to a second electrical node positioned between said second current source and said current dependent load.

42. (currently amended) A method, comprising:

operating a transistor device in a common base or common gate configuration to provide a virtual ground at a first terminal of the transistor device, wherein the virtual ground is provided by a servo device terminal, and wherein no active reactive components are positioned between the first terminal of the transistor device and the servo device terminal;

providing a number of input signal pathways coupled to the first terminal of the transistor device, wherein one of the input signal pathways is from a current source with a lowpass filter, the filter comprising active and passive components;

electrically coupling a laser device to a second terminal of the transistor device; and

controlling operation of the laser device with an input signal provided to the first terminal of the transistor device.

43. (cancelled)

44. (previously presented) The method of claim 42, wherein said operating includes controlling operation of the transistor device with a servo device, the servo device receiving feedback from the first terminal.

AJV:cswkka 09/14/05 409279.doc  
PATENT

Attorney Reference Number 23-70742-03  
Application Number 10/757,332

45. (currently amended) The method of claim 42, wherein the current source is a first current source, the method further comprising:

supplying an approximately constant bias current to the transistor device from a first the first current source; and

providing electrical current to the laser device from a second current source.

46. (original) The method of claim 42, wherein said operating includes regulating operation of the transistor device with a different transistor device having an emitter coupled to ground, the transistor device and the different transistor device having a base connection in common.

47. (currently amended) A method, comprising:  
operating a transistor device with first, second and third terminals in a common base or common gate configuration;  
coupling two or more input signal pathways to a first terminal of the transistor device;  
coupling a lowpass filter to a second or base terminal of the transistor device; and  
providing an AC output and a DC output from a third terminal of the transistor device to a current-dependent load.

48. (previously presented) The method of claim 47, wherein the transistor device is a first transistor device, wherein the first terminal corresponds to an emitter and the third terminal

AJV:csw:kaa 09/14/05 409279.doc  
PATENT

Attorney Reference Number 23-70742-03  
Application Number 10/757,332

corresponds to a collector, the method further comprising coupling a second transistor device to the base, the second transistor device comprising a ground-coupled emitter.

49. (previously presented) The method of claim 28, further comprising coupling a lowpass filter to a base or gate of the first transistor device.